FEDERALLY ENDANGERED

Shortnose Sturgeon

(Acipenser brevirostrum)

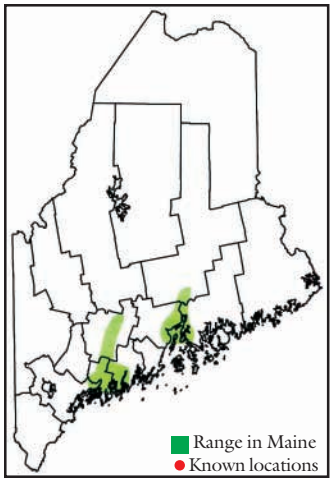
Duane Raver

Description

The shortnose sturgeon is among the most primitive of the bony fishes. It grows to a length of 48 inches and weight of about 15 pounds. It is much smaller than the Atlantic sturgeon that reaches nine feet. The shortnose sturgeon has a short, conical snout (as compared to the longer snout of the Atlantic sturgeon). It lacks scales, but has five rows of bony plates or scutes that run the length of the body. Its coloring is olive-yellow to gray or bluish on the back, and milky-white to dark yellow on the belly. The tail is long and pointed. The mouth is located on the underside of the head, and is well suited for bottom-feeding. Barbels (sensory organs) projecting from the chin and mouth are used to detect food.

Range and Habitat

The shortnose sturgeon is found along the Atlantic seaboard from the St. John River in New Brunswick to the St. John's River in Florida. In Maine, populations inhabit the Sheepscot, Kennebec, Androscoggin, and Penobscot Rivers, and Merrymeeting Bay. Throughout their range, shortnose sturgeon are found in larger rivers and associated estuaries.



Life History and Ecology

Shortnose sturgeon are anadromous, spending a portion of their lives in salt water, but returning to fresh water to spawn. However, in some northern populations (e.g., in the Kennebec River), a portion of the population forages in the saline estuary while others forage in fresh water. The normal habit is to migrate to fresh water to spawn, usually from April to May.

The shortnose sturgeon exhibits delayed sexual maturity, high reproductive capacity, and long life expectancy. Males and females mature at the same length (about 18 inches), but age at maturity varies with latitude. Sturgeon in the northern part of the range grow slower and mature later than those in the southern part of the range. Males reach sexual maturity in the north at 10-11 years and females at 12-18 years. Females usually breed every three years, and males may breed every year.

Spawning occurs in the spring at or above the head of tide. The female broadcasts her eggs in fresh water over a rubble bottom, and the male fertilizes them. Females lay 40,000-200,000 eggs, which hatch in about 13 days. After hatching, the larvae drift downstream and inhabit the deeper sections of river channels. Young of the year remain in fresh water. Juveniles (3-10 years old) move to the freshwater/saltwater interface. Adults are found in freshwater or tidal areas of rivers in summer and winter. They concentrate in small sections of the river, usually in areas of decreased river flow. These "concentration areas" may be associated with conditions suitable for the sturgeon's primary prey, freshwater mussels and crayfish. Juveniles feed primarily on insects and small crustaceans. Both adults and juveniles feed on the river bottom day

and night. Adult sturgeon in Merrymeeting Bay feed over submerged tidal flats and can tolerate rapid changes in salinity with the fluctuating tide. Other individuals feed in shallow and deep tidal channels. Female shortnose sturgeon may live to be 67 years old, while males seldom live beyond 30 years of age.

Threats

Pollution and overharvesting for commercial fisheries caused declines in shortnose sturgeon populations and were the primary reason for endangered species listing. During the 1800s and early 1900s, large tidal rivers, such as the Penobscot, were heavily polluted, resulting in high fish losses. At the same time, sturgeon were in high demand for caviar (eggs) and the fish's smoked flesh. Many rivers were dammed near the head of tide, preventing fish from swimming upriver. Maintenance dredging of large river channels to accommodate large ship traffic may also disturb habitat.

Conservation and Management

Shortnose sturgeon declined dramatically in Maine rivers by the early 1900s, and were nearly extirpated from the Penobscot River (only a single adult was found in 1997). However, the population in the estuarine complex of the Kennebec, Androscoggin, and Sheepscot Rivers is the largest population in the U.S. north of the Hudson River and numbers about 7,000 adults. The shortnose sturgeon was listed as a federal endangered species in 1967, and a federal recovery plan was completed in 1998.

This fish has been the subject of considerable research by Maine's Department of Marine Resources and others. Studies have included mark-recapture estimates of populations and radio-telemetry to track movements and habitat use. The Merrymeeting Bay area, critical habitat for the shortnose sturgeon, has been the recent focus of conservation efforts by state and federal conservation agencies, land trusts, and local conservation groups. Recently protected lands will help maintain the ecological integrity of this habitat for sturgeon and many other species of wildlife. The Maine Department of Marine Resources (DMR) has management authority for anadromous fish, including the shortnose sturgeon, and makes the following recommendations.

Recommendations:

✔ Maintain or enhance water quality in the Kennebec, Sheepscot, Androscoggin, and Penobscot Rivers by protecting riparian habitat and reducing or eliminating pollutants in these watersheds.

✔ Educate anglers to promptly return shortnose sturgeon unharmed if they are caught accidentally.

✔ Municipalities should follow Shoreland Zoning standards and strive to maintain areas adjacent to waterways providing habitat for threatened and endangered species in a low-density, rural setting. Identify these areas in comprehensive plans, and consider protecting waterways and a 250-foot upland buffer as Resource Protection Districts.

✔ To preserve water quality and river functions, maintain contiguous, forested riparian habitats at least 250 feet from waterways providing habitat for threatened and endangered species.

✔ Avoid placing roads, houses, yards, and other developments within 250 feet of waterways providing habitat for threatened and endangered species.

✔ When projects are proposed within 250 feet of waterways providing habitat for endangered or threatened species, adhere to forestry Best Management Practices (handbook available from the Maine Forest Service, SHS #22, Augusta, ME 04333) and Maine Erosion and Sediment Control Recommendations (available from the Maine Department of Environmental Protection, SHS #17, Augusta, ME 04333).

✔ Avoid stream alteration projects (water withdrawals, dredging, rip-rap, channelization, pipeline crossings, dams) that would alter flow or remove natural stream features such as riffles and pools. Do not remove large woody debris, an important habitat component.

✔ Avoid the use of broad-spectrum pesticides within ¼ mile of waterways providing habitat for threatened and endangered species.

✔ To maintain or improve water quality, conduct thorough reviews of dam and wastewater discharge proposals. Avoid land uses that would contribute to non-point sources of pollution.

✔ It is illegal to introduce fish species. Introductions could alter aquatic invertebrate communities and introduce new competitors, predators, or disease.